tion only.—A. **Blanc**: A radiation accompanying the oxidation of phosphorus. The oxidation of phosphorus is accompanied by the production of an ionising radiation of very slight penetrating power, and resembling the γ rays of radio-active substances.—M. de **Broglie**: The spectroscopy of the secondary rays emitted outside Röntgen tubes and the absorption spectra.—L. **Bouchet**: A manometric arrangement for studying very small deformations of indiarubber.—Ch. **Fabry** and H. **Buisson**: The experimental verification of the Doppler-Fizeau principle.—R. **Swyngedauw**: The control of the insulation of a triphase network.—Ernest **Berger**: The oxidation of copper: the influence of temperature and pressure. The oxidation of copper by dry oxygen can be traced down to a temperature of 15° C. The velocity of oxidation is tripled for each 10° rise of temperature.—Jules **Roux**: Study of the limit of some reactions by means of the hydrostatic balance. Examples of the application of a quartz float to determine small changes of density.—Victor **Henri** and Venceslas **Moycho**: The action of monochromatic ultra-violet rays on the tissues. Measurement of the energy of radiation corresponding to sunstroke.—G. **Courtois**: Some organic uranium salts of the monoacids of the fatty series.—P. **Lebeau** and M. **Picon**: The hydrogenation of the cyclic hydrocarbons by sodammonium. The preparation of naphthalene tetrahydride. Naphthalene and powdered sodium are treated with liquid ammonia, naphthalene tetrahydride, and sodium amide are produced.—G. **André**: The development of the bud in a living plant (chestnut).—W. **Kopaczewski**: Researches on the composition of *Scilla maritima*. A toxic glucoside, not containing nitrogen, has been isolated from the scilla.—Raoul **Bayeux** and Paul **Chevallier**: Comparative researches on the concentration of the arterial blood and venous blood at Paris, Chamonix, and Mt. Blanc, by the refractometric study of the serum.—J. **Tissot**: Destruction of serum activity by heat.—Robert **Dollfus**: *Trochicola enterica*, a parasitic Eucopepod of the intestine of the Trochidæ.—M. **Herlant**: The existence of a periodic rhythm in the determination of the first phenomena of experimental parthenogenetic development in the sea-urchin (*Paracentrotus lividus*).—Ch. A. **Rolland**: Contribution to the study of the constitution of bovine vesicular bile and of its lipoid portion.—Maurice **Gignoux** and Paul **Combay**: The history of the last rhodanian glaciations in the Belley basin.—L. **Cayeux**: The existence of numerous traces of perforating algæ in French oolitic iron minerals.—H. **Fonzes-Diacon** and M. **Fabre**: The detection of boron in mineral waters.—Albert **Baldit**: A case of globular lightning.

BOOKS RECEIVED.

Western Australia. Geological Survey. Bulletin No. 44. A Geological Reconnaissance of a Portion of the South-West Division of Western Australia. By E. C. Saint-Smith. Pp. 80. Bulletin No. 49. Geology and Mineral Resources of the Yilgarn Goldfield. Part 1. Southern Cross. By E. C. Saint-Smith and R. A. Farquharson. Pp. 193+plates. (Perth, W.A.)

The Teaching of Mathematics in Australia. By Prof. H. S. Carslaw. Pp. 79. (Sydney: Angus and Robertson, Ltd.; London: Oxford University Press.)

The Call of the Stars. By Dr. J. R. Kippax. Pp. xviii+431+xliii plates. (New York and London: G. P. Putnam's Sons.) 10*s*. 6*d*. net.

Die Süsswasser-Flora Deutschlands, Oesterreichs und der Schweiz. Edited by Prof. A. Pascher. Heft 6. Chlorophyceæ, III. By W. Heering. Pp. iv+250. (Jena: G. Fischer) 6 marks.

Chimie Physique Elémentaire. By E. Ariès. Tome Premier. Pp. xxx+212. (Paris: A. Hermann et Fils.) 4 francs.

Der Bau des Weltalls. By Prof. J. Scheiner. Vierte Auflage. Pp. iv+132. (Leipzig: B. G. Teubner.) 1.25 marks.

Vegetationsbilder. Edited by Drs. G. Karsten and H. Schenck. Zwölfte Reihe. Heft 2 and 3. Pp. iv+Tafel 7–18. (Jena: G. Fischer.) 8 marks.

I.K. Therapy, with Special Reference to Tuberculosis. By Dr. W. E. M. Armstrong. Pp. x+83. (London: H. K. Lewis.) 5*s*. net.

A Contribution to the Flora and Plant Formations of Mount Kinabalu and the Highlands of British North Borneo. By L. S. Gibbs. Pp. 240+plates 1–8. (London: Linnean Society.)

The Carnegie Foundation for the Advancement of Teaching. Eighth Annual Report of the President and of the Treasurer. Pp. vi+158. (New York City.)

Annual Report of the Meteorological Observatory of the Government General of Korea for the year 1912. Pp. iv+120+20. (Chemulpo.)

Manks Antiquities. By P. M. C. Kermode and Prof. W. A. Herdman. Second edition. Pp. 150. (Liverpool University Press.) 3*s*. net.

Memorabilia Mathematica, or the Philomath's Quotation-Book. By Prof. R. E. Moritz. Pp. x+410. (London: Macmillan and Co., Ltd.) 12*s*. 6*d*. net.

Twenty-sixth Annual Report of the Purdue University Agricultural Experiment Station, Lafayette, Indiana, for the Year Ending June 30, 1913. Pp. 88. (Lafayette, Ind.)

Aeronautics. Technical Report of the Advisory Committee for Aeronautics for the Year 1912–13 (with Appendices). Pp. 416. (London: H.M.S.O.; Wyman and Sons, Ltd.) 10*s*.

Spectrum Analysis Applied to Biology and Medicine. By the late Dr. C. A. MacMunn. Pp. xiv+112. (London: Longmans and Co.) 5*s*. net.

Problems of Science. By F. Enriques. Translated by K. Royce. Pp. xvi+392. (Chicago and London: Open Court Publishing Co.) 10*s*. net.

The Country Month by Month. By J. A. Owen and Prof. G. S. Boulger. New edition. Pp. x+492+plates. (London: Duckworth and Co.) 6*s*. net.

The Latest Light on Bible Lands. By P. S. P. Handcock. Second edition. Pp. xii+371. (London: S.P.C.K.) 6*s*. net.

Royal Society of London. Catalogue of Scientific Papers, 1800–1900. Subject Index. Vol. iii. Physics. Part ii. Electricity and Magnetism. Pp. xv+551–927+vii. (Cambridge University Press.) 15*s*. net.

Amulets Illustrated by the Egyptian Collection in University College, London. By Prof. W. M. Flinders Petrie. Pp. x+58+liv plates. (London: Constable and Co., Ltd.) 21*s*. net.

A Practical Treatise on Sub-Aqueous Foundations. By C. E. Fowler. Third edition. Pp. xliii+814. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 31*s*. 6*d*. net.

The Science of Knitting. By E. Tompkins. Pp. xiii+330. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 12*s*. 6*d*. net.

Chemical Examination of the Blood and its Technique. By Prof. A. Pappenheim. Translated by R. Donaldson. Pp. ix+87+ii plates. (Bristol: J. Wright and Sons.) 3*s*. 6*d*. net.

© 1914 Nature Publishing Group

The Statesman's Year-Book. Edited by Dr. J. Scott Keltie, assisted by Dr. M. Epstein. Pp. lxxix+1500. (London: Macmillan and Co., Ltd.) 10*s.* 6*d.* net.

The Standard Cyclopedia of Horticulture. By L. H. Bailey. Pp. xx+602+xx plates. (London: Macmillan and Co., Ltd.) 25*s.* net.

The Institute of Chemistry of Great Britain and Ireland. Lectures on Explosives. By W. Macnab. Pp. 68. (London: 30 Bloomsbury Square.)

Twelfth Report of the Sarawak Museum, 1913. By J. C. Moulton. Pp. ii+47. (Sarawak.)

Poems of Human Progress. By J. H. West. Pp. xii+328. (Boston: The Tufts College Press.) 1.50 dollars net.

Preliminary Practical Science. By H. Stanley. Pp. viii+128. (London: Methuen and Co., Ltd.) 1*s.* 6*d.*

Gearing. By A. E. Ingham. Pp. xi+181. (London: Methuen and Co., Ltd.) 5*s.* net.

DIARY OF SOCIETIES.

THURSDAY, JUNE 4.

ROYAL INSTITUTION, at 3.—Faraday and the Foundations of Electrical Engineering: Prof. S. P. Thompson.

LINNEAN SOCIETY, at 8.—The Botanical Results of a Recent Expedition to Turkestan: Dr. B. Fedtschenko.—Darwin's Alternative Explanation of the Origin of Species *without* the Means of Natural Selection: Prof. G. Henslow.—A Collection of Land and Freshwater Gastropods from Madagascar, with Descriptions of a New Genus and New Species: G. C. Robson.—Sections showing the Entire Vertical Thickness of a Seam of Coal: J. Lomax.—Notes on the Morphology of Certain Structures concerned in Reproduction in the Genus Gnetum: Prof. H. H. W. Pearson.—Curculionidæ from the Indian Ocean. (Percy Sladen Expedition): G. C. Champion.—Deto, a Subantarctic Genus of Terrestrial Isopoda: Prof. C. Chilton.

FRIDAY, JUNE 5.

ROYAL INSTITUTION, at 9.—X-rays and Crystalline Structure: Prof. W. H. Bragg.

GEOLOGISTS' ASSOCIATION, at 8.—Prehistoric Problems in Geology: R. A. Smith.

SATURDAY, JUNE 6.

ROYAL INSTITUTION, at 3.—Studies on Expression in Art. I.: Origin and Development: Sigismund Goetze.

MONDAY, JUNE 8.

ARISTOTELIAN SOCIETY, at 8.—The Treatment of History by Philosophers: D. Morrison.

SOCIETY OF CHEMICAL INDUSTRY, at 8.—The Dickson Centrifuge System of Sewage Treatment: E. H. Tripp.—Studies on the Reduction of Uranium Oxide: E. K. Rideal.—Contribution to the Discussion on Paper, Bleaching of Chemical Pulp, by Baker and Jennison, and Bleaching Efficiency considered in connection with Suggested Standard for Testing Bleaching Qualities of Chemical Wood Pulp: C. Beadle and H. P. Stevens.

INSTITUTE OF ACTUARIES, at 5.—Annual Meeting.

ROYAL GEOGRAPHICAL SOCIETY, at 8.45.—The Australian Antarctic Expedition: Dr. D. Mawson.

TUESDAY, JUNE 9.

ROYAL INSTITUTION, at 3.—Celestial Spectroscopy: Prof. A. Fowler.

ZOOLOGICAL SOCIETY, at 8.30.—A Report on the Fauna of the Monte Bello Islands: P. D. Montague.—Cephalopoda from the Monte Bello Islands: G. C. Robson.—Stalk-eyed Crustaceans collected at the Monte Bello Islands: Miss M. J. Rathburn.—Report on Mollusca collected at the Monte Bello Islands: T. Iredale.—Zoological Results of the Third Tanganyika Expedition conducted by Dr. W. A. Cunnington, 1904–1905. Report on the Parasitic Eucopepoda: Dr. W. A. Cunnington.—Contributions to the Anatomy and Systematic Arrangement of the Cestoidea. XIV. A New Species of Rhabdometra and on the Paruterine Organ in Otiditænia: Dr. F. E. Beddard.—The Marine Fauna of British East Africa, from Collections made by Cyril Crossland, in the Years 1901–1902: A. W. Waters.—(1) The Facial Vibrissæ of Mammals; (2) The Feet and other External Characters of the Ursidæ and Canidæ: R. I. Pocock.—*Procolophon trigoniceps*: a Cotylosaurian Reptile from South Africa: D. M. S. Watson.—A Second Collection of Batrachians and Reptiles made by Dr. H. G. F. Spurrell, in the Choco, Colombia: Dr. G. A. Boulenger.

RÖNTGEN SOCIETY, at 8.15.—Annual General Meeting.

WEDNESDAY, JUNE 10.

GEOLOGICAL SOCIETY, at 8.—The Geology and Glaciology of the Antarctic Regions: Dr. D. Mawson.—The Ballachulish Fold at the Head of Loch Creran (Argyllshire): E. B. Bailey.

THURSDAY, JUNE 11.

ROYAL SOCIETY, at 4.30.—Croonian Lecture: The Bearing of Cytological Research on Heredity: Prof. E. B. Wilson.

ROYAL INSTITUTION, at 3.—Faraday and the Foundations of Electrical Engineering: Prof. S. P. Thompson.

FRIDAY, JUNE 12.

ROYAL INSTITUTION, at 9.—Some Aspects of the American Democracy: The Hon. W. H. Page.

ROYAL ASTRONOMICAL SOCIETY, at 5.

PHYSICAL SOCIETY, at 8.—Note on the Connection between the Method of Least Squares and the Fourier Method of Calculating the Co-efficients of a Trigonometrical Series to Represent a Given Function or Series of Observations: Prof. C. H. Lees.—A Magnetograph for Measuring Variations in the Horizontal Intensity of the Earth's Magnetic Field: F. E. Smith.—The Atomic Weight of Copper by Electrolysis: A. G. Shrimpton.—Note on an Improvement in the Einthoven String Galvanometer: W. H. Apthorpe.

MALACOLOGICAL SOCIETY, at 8.—*Sulcobasis concisa*, Fer., and its Nearest Allies: C. R. Boettger.—Note on the radula and maxilla of *Orthalicus zebra*, Müller: Rev. E. W. Bowell.—(1) Invalid Molluscan Generic Names; (2) A New Cassid: T. Iredale.—The Relative Claim to Priority of the Names *Helix carduelis*, Schulze, and *Helix fruticum*, Müller: G. K. Gude.

SATURDAY, JUNE 13.

ROYAL INSTITUTION, at 3.—Studies on Expression in Art. II.: Right Expression in Modern Conditions: Sigismund Goetze.

CONTENTS.

	PAGE
Medieval Technology. By Prof. Walter M. Gardner	343
Taxonomic Zoology	343
Six Essays on Sex. By J. A. T.	345
Our Bookshelf	348
Letters to the Editor:—	
Efficiency of Damped Seismographs.—Prince B. Galitzin	349
Spectra of Secondary X-Rays.—Duc de Broglie	349
Weather Forecasts. (*With Diagram.*)—A. Mallock, F.R.S.	349
The Plumage Bill.—Lieut.-Col. J. Manners-Smith; Sir H. H. Johnston, G.C.M.G., K.C.B.	350
Atomic Volume Curves of the Elements.—Dr. R. M. Caven; Prof. R. Meldola, F.R.S.	351
Transmission of Electric Waves Round the Bend of the Earth.—Dr. W. Eccles	351
Science and the State	351
Popular Natural History. (*Illustrated.*)	353
The Roger Bacon Commemoration at Oxford	354
Sir Joseph Wilson Swan, F.R.S. By W. A. J. O'M.	355
Dr. P. H. Pye-Smith, F.R.S.	356
Notes	357
Our Astronomical Column:—	
Rotating Nebulæ	361
Collated List of Lunar Formations	361
The Light of Stars	361
The Spectrum of η Carinæ (η Argus)	362
Scottish Fishery Investigations. By E. J. A.	362
Thirteen Years' Measurements of Solar Radiation. By E. Gold	362
American Research on Clays. By Dr. J. W. Mellor	363
Fluid Motions. (*With Diagrams.*) By Lord Rayleigh, O.M., F.R.S.	364
The Utilisation of Solar Energy. (*Illustrated.*)	366
University and Educational Intelligence	366
Societies and Academies	367
Books Received	369
Diary of Societies	370

Editorial and Publishing Offices:

MACMILLAN & CO., LTD.,

ST. MARTIN'S STREET, LONDON, W.C.

Advertisements and business letters to be addressed to the Publishers.

Editorial Communications to the Editor.

Telegraphic Address: PHUSIS, LONDON.

Telephone Number: GERRARD 8830.

© 1914 Nature Publishing Group